Enterostomy for Acute Intestinal Obstruction

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WHILE studying the results of laparotomy for acute intestinal obstruction, in the preparation of a recent paper (*Annals of Surgery*, May, 1888, p. 329), I could find no statistics of the operation of enterostomy performed for that condition, except the figures of Treves, who gives a rate of mortality of 67.2 per cent. in sixty-one cases—a percentage which appeared to me much too high. A tolerably thorough search through the literature has revealed the fact that the operation is less often performed at the present time than laparotomy, or, at least, less often reported, for I have been able to gather only sixty-two cases, against the three hundred and twenty-eight cases of laparotomy which formed the basis of my first study.

It should be stated in the beginning that, by enterostomy is understood the operation of forming an artificial anus in any portion of the intestinal canal, including both "enterotomy" and colotomy. The cases have been collected within the same limits as the series of laparotomies, using only the acute cases with sufficiently complete histories, from 1873 to the end of 1887. It is often difficult to draw the line between the acute and chronic cases, and in some instances it has not been easy to determine whether certain operations, in which considerable exploration of the peritoneal cavity was made, should be classified as enterostomies or laparotomies. But as the same hand has

collected both series, it is hoped that the errors will balance, or, at least, give no undue favor to either side.

The results in this series of sixty-two cases of enterostomy, performed for acute intestinal obstruction, were as follows: Forty-six cases (seventy-two per cent.) were relieved by the operation, six cases were not relieved (in three the fistula was established below the obstructed point), and in the other ten cases there is no definite statement whether relief was obtained or not, several of them having died within a very few hours.

Thirty-two cases recovered. In nineteen of these cases the fæces resumed their natural passage per anum, generally within a few days—three cases within twenty-four hours, nine more during the first week, and four more during the second week. The longest interval before the resumption of passages per anum in these cases was ten weeks. To these should be added two of the fatal cases, in which the passages per anum were resumed four, and fourteen days, respectively, after the operation. The fistula closed spontaneously in seven cases, and in six others it was closed by operation. It probably closed, or at least contracted to inconsiderable dimensions, in many others who were lost sight of before that result was attained.

Thirty cases died, a mortality of only 48.3 per cent. Stating these facts in tabular form we have:

Relieved by the operation	46	cases,	= 72 per cent.
Not relieved	6	"	
Recovered	32	"	= 51.7 "
Passages per anum resumed in	19	"	= 60 " of recoveries.
Died	30	"	= 48.3 per cent.

These results were so remarkable that I hesitated to adopt them. A certain glamour surrounds the laparotomist, and a surgeon might be ready to publish an unsuccessful case of laparotomy, who would feel that there was but little honor to be won in publishing an unsuccessful

enterostomy. But the last fifteen cases in the series happen to furnish the results of the experience of two surgeons, Schede and Fuhr, and presumably contain all their failures as well as their successes, and an analysis of these cases yields results even more favorable than that of the entire series. Their record reads: Total, 15; relieved, 14; unrelieved, 1; died, 4; recovered, 11, including as a recovery one case which died of delirium tremens ten days after the operation, and in which natural passage of the fæces took place on the fifth day. Of the eleven cases which recovered, the passages per anum were resumed in seven, including the case just mentioned. The fistula closed spontaneously in two cases, and in four it was closed by plastic operation. Among the fatal cases is also a case in which natural passages took place in fourteen days, death being due to an attack of erysipelas two months after the fistula was formed.

Another aspect of this subject is the condition of the patients who recovered at the time of the operation. This is given in twenty-one of the thirty-two cases, being fair in six, bad in eight, and very poor in seven cases. In many cases, in fact, it was the bad condition of the patient which led to the choice of enterostomy instead of laparotomy. These facts compel us to accept these favorable results for enterostomy, however bad the comparison may be for laparotomy, with its mortality of 68.9 per cent.

That there may be no dispute as to classification, the details of all the cases in which there could possibly be room for doubt (four cases ranked as recoveries, and two as deaths) are given below.

Case LI.—Male, aged forty-five years. Obstruction for six days. In very bad condition. Enterostomy, left side. Fæces per anum in five days. Was recovering, when delirium tremens set in. Died on tenth day. Considered as a recovery from both obstruction and operation.

Case XXXI.—Male, aged seventy-six years. Obstruction for fifteen days. Bad condition. Enterostomy, right groin, relieved. Mental disease, refused food, died in

three weeks. Autopsy—volvulus of small intestine below the fistula, gut not gangrenous. Considered as a recovery.

Cases LIII. and LXII. died of the results of over-distention of the bowel by the accumulation of material between the fistula and the point of obstruction below, but after such a long interval that they may fairly be classed as recoveries. The details of these cases will be given below.

Case XII.—Male, aged forty-three years. Obstruction for six days. (Attacks ten and twenty days previously, relieved by enema, and by the introduction of the hand into the rectum.) A tumor felt between the bladder and the rectum. Left lumbar colotomy. Was relieved, but continued to lose strength, and thirteen days later something was felt by the patient to give way inside, death following within an hour. Here probably the operation relieved the obstruction, but progress of a cancerous tumor continued and resulted in perforation of the bowel. But as it is not certain that this was not a case of volvulus or internal strangulation with gangrene and perforation, it is reckoned among the fatal cases.

Case XLVIII.—Female, aged fifty-eight years. Obstruction four days. (Three weeks previously herniotomy was performed for right femoral hernia, and a fecal fistula formed in the wound, and erysipelas attacked it.) Very bad condition. Enterostomy, left groin, relieved. The other fistula began to discharge again in seven days, and fæces passed per anum in fourteen days. The right fistula closed spontaneously, and the left was closing when erysipelas started again from it, and caused death two months after the operation. Autopsy revealed adhesions as the cause of the obstruction. This case is considered a fatal one, because of the septic infection of the wound, one of the dangers of the operation, even as late as it took place in this patient.

An analysis of the causes of death is necessary, especially in comparing the operation with laparotomy, and they are given in the following table :

Causes of Death after Enterostomy for Acute Intestinal Obstruction.

	Cases.	
Sepsis from the wound	5	
Failure to reach distended gut	3	
Gangrene of the gut subsequent to the operation	4	
Shock	4	
Total due to the operation, or its failure		16
Bad condition of the patient	7	
Heart failure	1	
Perforation of gut on thirteenth day. (Cancer?)	1	
Gangrene of the gut existing at time of operation	1	
Extensive adhesions, infant, malnutrition	1	
Total, independent of operation		11
Cause unknown		3
Total		30

In order to compare these results with those of laparotomy I quote the table from the article referred to, with some variation in arrangement.

Causes of Death after Laparotomy for Acute Intestinal Obstruction.

	Cases.	
Sepsis not due to gangrene of the bowel	17	
Prolonged operation	3	
Shock	13	
Cause of obstruction overlooked, or not found	19	
Total due to the operation, or its failure		52
Poor condition of the patient	101	
Complications (peritonitis, gangrene, various)	41	
Cause of obstruction irremediable	9	
Total, independent of the operation		151
Cause unknown, details wanting		23
Total		226

It will be seen at once that a larger proportion of deaths are set down as due to the operation in enterostomy than in laparotomy, but the reason is simply that the great majority of these patients are in such a miserable condition that the mere shock of an operation like laparotomy causes death, while enterostomy is so much less severe that its performance is seldom immediately fatal. Hence not enough patients survived the first danger of laparotomy—the shock—to enable us to form an idea of how many would have perished of peritonitis and other dangers of the operation. Certainly the proportion of these later accidents would have been much greater after laparotomy than after the relatively simple operation of enterostomy.

One very remarkable fact which appears in this study of the causes of death is that in only three cases was death occasioned by gangrene of the gut taking place after the operation. This danger at once occurs to the mind as the chief objection to enterostomy as compared with laparotomy, for by the latter operation the surgeon is enabled to remove the cause of the obstruction, while in the former it is left untouched. It is natural to suppose that a failure to cut the band, untwist the volvulus, or reduce the intussusception would be followed by gangrene of the gut and certain death, even if the bowel above were relieved of its contents by an artificial anus. But, as we have seen, the facts do not support this belief. More than that, there are some cases at our disposal which prove that relief of the pressure from behind will actually remove the cause of constriction, or render it so harmless that the fæces can even resume their normal passage. We give these cases in detail.

Case XLV.—Female, aged fifty-two years. Obstruction for ten days. Enterostomy, right groin, cæcum opened. Exploration through the wound showed existence of an intussusception of the ascending colon. Recovered.

Case XXXVII.—Male. Enterostomy, right groin. In two weeks twenty centimetres of gangrenous gut was

expelled per anum. Recovered. In this case the enterostomy gave time for spontaneous cure.

Case XXXI.—Male, aged seventy-six years. Obstruction for fifteen days. Bad condition. Enterostomy, right groin. Relieved, no passage per anum. Demented, refused food, died of inanition in three weeks. Autopsy: Volvulus of small intestine below the fistula, without gangrene of the gut.

Case XLVIII.—The details of this case have been given above. Obstruction was caused by adhesions, and relieved by enterostomy.

Case LV.—Male, aged forty-two years. Obstruction for four days. Poor condition. Enterostomy, right iliac, small intestine opened. Fæces per anum in five days. Six weeks later, laparotomy, adhesions in pelvis found and freed, and artificial anus closed. Recovered.

Case LVIII.—Female, aged thirty-eight years. Obstruction for three days. Femoral hernia. Herniotomy, no constriction in sac; incision extended upward, and cæcum opened. Fæces per anum in two weeks. Four weeks later laparotomy to close the fistula; a band found attached to the small intestine and the cæcum, supposed cause of obstruction, divided. Recovered.

Case XLIII.—Female, aged fifty-two years. Obstruction for six days. Enterostomy, left groin. A few hours later a large mass of fig-seeds passed per anum and there was no further trouble. The fistula contracted rapidly.

To these cases we may add a similar one observed by v. Wahl (*St. Petersburg med. Wochenschr.*, 1886, 183).

Female, aged fifty-four years. Obstruction after reduction of umbilical hernia. On sixth day a fistula was made at the umbilicus without relief. On the twelfth day, laparotomy, median incision above the umbilicus; no cause of obstruction found; artificial anus made in the incision. Fæces per anum in three days. Recovered. Fistula permanent. v. Wahl considers this a case of internal incarceration.

These cases show that intussusception, volvulus, adhe-

sions, bands, impaction of foreign bodies, and even internal incarceration, can be relieved, or at least rendered harmless, by simply removing the pressure from behind, as is done by opening the distended bowel. In some cases, indeed, this would seem probable enough *à priori*. The adhesion, band, or even internal incarceration, has in most cases existed for some time, and the intestine has maintained its passage by increased force of peristalsis. But although the parts remain nearly in the same relative position, some sudden undue distention of the gut causes the latter to be so bent or constricted that it can no longer overcome the obstruction in the path of its contents. The longer the obstruction lasts, the greater the pressure and the tighter the constriction. Remove the pressure entirely, and it becomes easy for affairs to return to their previous condition, the gut having its former power of overcoming the obstruction restored to it. Even when a loop of intestine has slipped into an opening, or under a band, for the first time, it is not at all improbable that the relief of pressure will enable it to escape again. At all events, our cases prove that there is some hope that it may do so, and that there is a "fighting chance" in enterostomy.

The operation of enterostomy may fail in three ways: First, the fistula may be made below the constricted point, especially when there is more than one obstruction, or it may be situated in the distended and doubly occluded loop which has undergone a volvulus, or been strangulated through an abnormal aperture; secondly, the fistula may be properly placed, and yet be inefficient because the bowel refuses to contract, being paralyzed by over-distention or by peritonitis; thirdly, the fistula may act well, but death may ensue by continuance of the constriction and gangrene of the included gut. We have just discussed the last cause of failure. Of the second there are two instances in our series, Cases XVI. and XVII., besides others in which the fistula acted, but not until some time after it was formed. As to the first cause of fail-

ure, in only three cases was the fistula made below the point of obstruction, a percentage of 4.8, which compares very favorably with the record of failures in laparotomy, for in nineteen cases out of three hundred and twenty-eight of the latter, 5.8 per cent., death resulted because the obstruction was overlooked or could not be found.

But besides the liability to death at the time of operation, from the original obstruction, from failure of the operation, or from some of the dangers inherent in it, there remains a source of danger to the bearer of a permanent fistula with a permanent constriction of the bowel farther down, in the possibility of accumulation of fecal matter between the two. This is well illustrated by the following cases:

Case LIII.—Female, aged forty-seven years. Obstruction for thirteen days. Enterostomy, left groin. Recovered. No passages per anum. Two years later she died with an enormously distended abdomen, although the fistula continued to act. Autopsy showed a cicatricial stricture of the sigmoid flexure, with a great collection of fecal matter between it and the fistula above, and this had caused death by its pressure upon all the viscera, and by fecal absorption.

Case LXII.—Male, aged eighty years, but robust. Obstruction for fourteen days, good condition. Colotomy, cæcum opened. Recovered. Several months later he died of rupture of the intestine where the wall was perfectly healthy, the whole large intestine being very much distended by fæces collected below the fistula and above the obstruction, which was a cancer situated in the sigmoid flexure.

To avoid such consequences as these, it has been proposed to construct the artificial anus in such a way as to form a spur, and prevent the passage of any fecal matter beyond. But in cases of acute obstruction this practice would certainly be unjustifiable, for we should then lose the advantage of the large percentage of cases which may hope to recover with normal passage for the fæces. This

modification of the operation should be confined to cases in which a positive diagnosis of cancer or stricture is possible, and fortunately this is generally not difficult. In all cases of acute obstruction the intestine should be simply sutured in the wound, in such a way as to avoid the formation of a spur.

With regard to this return of the fæces to their natural passage, it must be noted that, even after laparotomy, this ideal result cannot always be obtained. From Table IV. of the paper already quoted, it will be seen that in one hundred and two cases which recovered after laparotomy, in only eighty-one could the natural channel of the fæces be preserved, giving a rate of seventy-nine per cent., which is not so very much better than the sixty per cent. which we have found for enterostomy. This result is less surprising when it is remembered how late these cases are brought to the surgeon, and how often extensive adhesions, gangrene of the bowel, or the feeble state of the patient (demanding a rapid termination of the operation) compel the surgeon to make an artificial anus.

For the sake of completeness, the following facts may be recorded before closing: The fistula was made in the right groin twenty-eight times, in the left, twenty-one times. The small intestine was opened in thirteen cases, the sigmoid flexure in six, and the cæcum in nine, the rest not being specified. Lumbar colotomy was performed in seven cases.

The variety of obstruction was determined (mostly by autopsy in fatal cases) to be—intussusception in six cases, four died; volvulus in three cases, two died; adhesions in five cases, four died; bands and diverticula in four cases, three died; internal incarceration in one case, fatal; stricture, five cases, four died; tumors of the bowel, ten cases, six died; foreign bodies, two cases, none died; compression by pelvic tumor, one case, recovered; peri-uterine hæmatocele, one case, recovered; no cause of obstruction found, two cases (peritonitis, paralysis of intestine), both died. In the other twenty-one

cases, with three deaths, the cause was not ascertained. The relative mortality for these various forms of obstruction is unimportant, for the numbers are too small, but it is remarkable that, out of ten cases of tumor of the intestine, and six cases of stricture, which are supposed to be the most promising varieties of obstruction for this mode of treatment, there were ten deaths; while, on the other hand, two cases of intussusception recovered out of six, and one case out of four of volvulus.

In conclusion, we may compare the two operations for the relief of acute intestinal obstruction as follows: 1. The mortality for laparotomy is 68.9 per cent. The mortality for enterostomy is 48.7 per cent. 2. In enterostomy 4.8 per cent. of the sixty-two cases died because the operation did not relieve the constriction; but even in laparotomy 5.8 per cent. of the three hundred and twenty-eight cases died from the same cause. 3. Enterostomy restores the natural passage for the fæces in sixty per cent. of the cases which recovered; while even laparotomy preserves it in only seventy-nine per cent. of the recoveries. 4. Laparotomy is therefore so very little better than enterostomy, that, in consideration of its greatly increased risk, it is indicated only when the patient's condition is so good that he can bear the shock, and when the intestines are not so greatly distended as to offer a serious obstacle to a thorough exploration of the abdomen. 5. Under all other circumstances enterostomy should be performed, and if necessary this can be done without an anæsthetic. Laparotomy may be resorted to later, to remove the cause of obstruction and to close the artificial anus. 6. Whichever operation may be chosen, it is necessary to operate early, for every delay greatly increases the risk of failure.

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